WHAT IS CLAIMED IS:

1. A solid state imaging apparatus comprising:

a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows and two columns;

a plurality of floating diffusion sections each being connected to each of ones of the photoelectric sections which are included in the same row of each said photoelectric conversion cell via each of a plurality of transfer transistors, and being shared by said ones of the photoelectric sections which are included in the same row;

a plurality of read-out lines each being selectively connected to at least two of the transfer transistors; and

a plurality of pixel amplifier transistors each detecting and outputting the potential of each said the floating diffusion section

wherein respective charges of the photoelectric conversion sections each being connected to one of the read-out lines and being read out by the transfer transistors are read out by different floating diffusion sections.

2. The solid state imaging apparatus of claim 1, wherein each said read-out line is connected to a transfer transistor connected to ones of the photoelectric conversion sections which are included in the same column.

3. The solid state imaging apparatus of claim 1, wherein each said read-out line is connected to a transfer transistor connected to ones of the photoelectric conversion sections which are included in two adjacent columns, respectively.

4. The solid state imaging apparatus of claim 1, wherein each said floating

diffusion section and each said pixel amplifier transistor are shared by a row which is read out by a transfer transistor connected to one of the read-out line and another row which is adjacent to the read-out row.

5. The solid state imaging apparatus of claim 1, further comprising:

a signal line for outputting a signal from each said pixel amplifier transistor to the outside; and

a select transistor which is provided between the pixel amplifier transistor and the signal line to selectively conduct between the pixel amplifier transistor and the signal line.

6. The solid state imaging apparatus of claim 1, wherein each said floating diffusion section and each said pixel amplifier transistor are shared by photoelectric conversion sections which are adjacent to each other in the row direction or in the column direction.

7. The solid state imaging apparatus of claim 1, wherein in each said floating diffusion section, a reset section for resetting charge stored in the floating diffusion section.

8. The solid state imaging apparatus of claim 1, wherein the photoelectric conversion sections are arranged so as to be spaced apart from one another by a certain distance in the row direction or in the column direction.

9. The solid state imaging apparatus of claim 1, further comprising a signal processing circuit for processing an output signal from each said pixel amplifier transistor.

10. The solid state imaging apparatus of claim 1, wherein the photoelectric conversion cells are separated from one another by a power supply line which also functions as a light-shielding film.

11. A method for driving a solid state imaging apparatus which includes: a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows and two columns; a plurality of floating diffusion sections each being connected to each of ones of the photoelectric sections which are included in the same row of each said photoelectric conversion cell via each of a plurality of transfer transistors, and being shared by said ones of the photoelectric sections which are included in the same row; a plurality of read-out lines each being selectively connected to at least two of the transfer transistors; and a plurality of pixel amplifier transistors each detecting and outputting the potential of each said the floating diffusion section, in which respective charges of the photoelectric conversion sections each being connected to one of the read-out lines and being read out by the transfer transistors are read out by different floating diffusion sections and each said read-out line is connected to a transfer transistor connected to ones of the photoelectric conversion sections which are included in the same column, respectively, the method comprising the steps of:

a first step of transferring, in each said photoelectric conversion cell, by a first read-out line of the read-out lines, signal charges from ones of the photoelectric conversion sections which are not included in the same row but included in two columns adjacent to each other, respectively, to one of the floating diffusion sections connected to said ones of the photoelectric conversion sections; and

a second step of transferring, by a second read-out line of the read-out lines, signal

charges from ones of the photoelectric conversion sections which have not been read out in the first step to the same floating diffusion section connected to said ones of the photoelectric conversion sections as that in the first step.

12. A solid state imaging apparatus comprising:

a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows;

a plurality of floating diffusion sections each being connected, via each of a plurality of transfer transistors, to each of ones of the photoelectric conversion sections which are included in adjacent rows, respectively, and which are included in the same column in each said photoelectric conversion cell, and each being shared by said ones of the photoelectric conversion sections;

a plurality of read-out lines each being connected to one of the transfer transistors and independently reading out charge from each of said ones of the photoelectric conversion sections to each said floating diffusion section shared by said ones of the photoelectric conversion sections; and

a plurality of pixel amplifier transistors each detecting and outputting the potential of the floating diffusion section.

13. The solid state imaging apparatus of claim 12, further comprising a reset transistor for resetting charge stored in each said floating diffusion section

wherein the drain of the reset transistor is connected to the drain of the pixel amplifier transistor so that a drain is shared by the reset transistor and the pixel amplifier transistor.

14. The solid state imaging apparatus of claim 12, wherein each said floating diffusion section is arranged between ones of the photoelectric conversion sections which are adjacent to each other in the row direction in each said photoelectric conversion cell.

15. The solid state imaging apparatus of claim 12, wherein each said transfer transistor is made of an MIS transistor, and

wherein a gate of the MIS transistor is arranged in the row direction.

16. The solid state imaging apparatus of claim 12, wherein each said pixel amplifier transistor is arranged between rows which include some of the photoelectric conversion sections and are adjacent to each other in each said photoelectric conversion cell.

17. The solid state imaging apparatus of claim 12, wherein each said pixel amplifier transistor and each said floating diffusion section are arranged between adjacent ones of the read out lines.

18. The solid state imaging apparatus of claim 12, wherein each said pixel amplifier transistor is arranged between ones of the photoelectric cells which are adjacent to each other in the column direction.

19. The solid state imaging apparatus of claim 18, wherein each said transfer transistor is made of an MIS transistor, and

wherein each said pixel amplifier transistor is arranged between respective gates of the MIS transistor and another MIS transistor.

20. The solid state imaging apparatus of claim 13, wherein each said reset transistor is arranged between rows which include some of the photoelectric conversion sections and are adjacent to each other in each said photoelectric conversion cell.

21. The solid state imaging apparatus of claim 13, wherein each said pixel amplifier transistor and the floating diffusion section are arranged between adjacent ones of the read out lines.

22. The solid state imaging apparatus of claim 13, wherein each said reset transistor is connected to a line arranged between ones of the photoelectric cells which are adjacent to each other in the row direction.

23. The solid state imaging apparatus of claim 13, wherein each said reset transistor is arranged between ones of the photoelectric conversion cells which are adjacent to each other in the column direction.

24. The solid state imaging apparatus of claim 23, wherein each said transfer transistor is made of an MIS transistor, and

wherein each said reset transistor is arranged between respective gate of the MIS transistor and another MIS transistor.

25. The solid state imaging apparatus of claim 12, wherein each said floating diffusion section is arranged between ones of the photoelectric conversion cells which are adjacent to each other in the column direction.

26. The solid state imaging apparatus of claim 12, wherein the photoelectric conversion sections are arranged so as to be spaced apart from one another by a certain distance in at least one of the row direction and the column direction.

27. The solid state imaging apparatus of claim 13, wherein the line connecting respective drains of the reset transistor and the pixel amplifier transistor also functions as a light-shielding film.

28. The solid state imaging apparatus of claim 12, further comprising a signal processing circuit for processing an output signal output from each said pixel amplifier transistor.

29. A camera comprising a solid state imaging apparatus, the apparatus including:

a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows and two columns;

a plurality of floating diffusion sections each being connected to each of ones of the photoelectric sections which are included in the same row of each said photoelectric conversion cell via each of a plurality of transfer transistors, and being shared by said ones of the photoelectric sections which are included in the same row;

a plurality of read-out lines each being selectively connected to at least two of the transfer transistors; and

a plurality of pixel amplifier transistors each detecting and outputting the potential of each said the floating diffusion section,

wherein respective charges of the photoelectric conversion sections each being connected to one of the read-out lines and being read out by the transfer transistors are read

out by different floating diffusion sections.

30. A camera comprising a solid state imaging apparatus, the apparatus including:

a plurality of photoelectric conversion cells each including a plurality of photoelectric sections arranged in an array of at least two rows;

a plurality of floating diffusion sections, each being connected, via each of a plurality of transfer transistors, to each of ones of the photoelectric conversion sections which are included in adjacent rows, respectively, and which are included in the same column in each said photoelectric conversion cell, and each being shared by said ones of the photoelectric conversion sections;

a plurality of read-out lines each being connected to one of the transfer transistors and independently reading out charge from each of said ones of the photoelectric conversion sections to each said floating diffusion section shared by said ones of the photoelectric conversion sections; and

a plurality of pixel amplifier transistors each detecting and outputting the potential of the floating diffusion section.